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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Paper No. 13

Application Number: 09/447,554
Filing Date: November 23, 1999
Appellant(s): FAN ET AL.

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Technology Center 2600

James A. Oliff & Robert J. Webster
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on April 17, 2003

(1)   Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2)   Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly

affect or be directly affected by or have a bearing on the decision in the pending appeal

is contained in the brief.

(3)   Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4)   Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection

contained in the brief is correct.

(5)   Summary of Invention

The summary of invention contained in the brief is correct.

(6)   Issues

The appellant's statement of the issues in the brief is correct.

(7)   Grouping of Claims

Claims 1 and 11; claims 2, 12, 21, and claims 22; 3-5 and 13-15; claims 6-8 and

16-18: and 9, 10, 19-20 stand or fall together.

(8)   Claims Appealed

The copy of the appealed claims contained in the Appendix of Claims to the brief is

correct.

(9)   Prior Art of Record

6,011,868	Van den Branden et al.	01-2000
6,064,324	Shimizu et al.	05-2000
5,434,623	Coleman et al.	06-1995
5,150,433	Daly	09-1992

Yovanof et al. "Statistical analysis of the DCT Coefficients and their Quantization

Error"), Thirtieth Asilomar Conference on Signals Systems and Computers, 1995, vol1,

pp. 601-605.

(10)   Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1.   Claims 1-5, 7-8, 10, 11-15, 17-18, 20-22 are rejected under 35 U.S.C. 103 (a) as

unpatentable over US 6011868 to Van den Branden et al. in view of US 6064324 to

Shimizu et al. or US 5434623 to Coleman et al.

As to claim 1, Van den Branden discloses a method for processing

decompressed image data, comprising:

receiving decompressed image data (Fig. 8, col. 9 lines 39-47, col. 13, lines

21-42);

creating an estimated quantization table from the received decompressed

image data (col. 10 , lines 1-45, col. 12 line 36-col. 13, line 42, note that modifying a

quantization table to a new one can be viewed as creating an Q table);

processing the decompressed image data based on the determined estimated

quantization table to form processed electronic image data (col. 12 line 36-col. 13,

line 42).

Van den Branden does not mention creating a quantization table without

transmitting the quantization table used in the compression process, for the sake of

argument, the limitation is well known in the art.

Shimizu, in an analogous environment, discloses a decoding method and

apparatus to create an quantization width without transmitting information on

quantization width (title, abstract).

In addition, Coleman, in an analogous environment, discloses a decoding

method and apparatus create an quantization factors without transmitting

information on quantization factor (col. 12, lines 10-15).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to include the schemes of Shimizu or Coleman in the method of

Van den Branden in order to improve the compression speed, quality, and the

efficiency of the method (Shimizu, col. 1 lines 50-67, Coleman, col. 4 lines 18-67).

As to claim 2, Van den Branden further discloses processing the

decompressed image data without using the created quantization table (col. 6 lines

40-62, note that the quality analyzer is selectable by the user, and if not selecting the

quality analyzer, no created quantization table will be used)

As to claims 3-5, Van den Branden further discloses the estimated

quantization table comprises creating the estimated quantization table based on at

least one maximum likelihood estimation based on a Gaussian distribution(col. 12

line 36-col. 13, line 42).

As to claim 7, Van den Branden further discloses creating the estimated

quantization table further comprises generating transformed image data from the

decompressed image data using a discrete cosine transform (Fig. 8, col. 12 lines 19-

67).

As to claim 8, Van den Branden further discloses generating a histogram

from the transformed image data (col. 13, lines 1-20).

As to claim 10, Van den Branden further discloses creating the estimated

quantization table further comprises rounding each DCT coefficient of the transformed

image data (col. 12 line 36-col. 13 line 20, note that quantization is inherently rounding).

Claims 11-15, 17-18, and 20 are the corresponding system claims to claims

1-6, 7-8 and 10 respectively. The discussions are addressed with regard to claims 1-6,

7-8 and 10.

As to claims 21-22, the elements are discussed with regard to claim 1.

2.   Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Van den Branden, Shimizu, and Coleman, further in view of the article "Statistical

analysis of the DCT coefficients and their quantization error" to Yovanof et al (a

reference of record).

As the claims 9 and 19, Van den Branden discloses determine the quatization

table based histogram but does not explicitly mention the using three levels to

determine the quantization table.

Yovanof, in an analogous environment, discloses identifiying a level of a main

lobe of the histogram having a highest peak and two adjacent levels of the histogram

adjacent to the identified level (Fig. 4); and only on the identified and adjacent levels of

the histogram (Figs. 3-4, page 602-603).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to include the scheme of Yovanof in the method of Van den

Branden in order to improve the modeling of error incurred during the quantization of the

DCT coefficient and the quality of the images (Yovanof, page 601-602 section 1).

3.   Claims 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Van den Branden, Shimizu, and Coleman, further in view of US 5150433 to Daly

(a reference of record).

As to claims 6 and 16, Van den Branden does not explicitly mention detecting the

uniform area of a block.

Daly, in an analogous environment, discloses the steps of:

determining, for each block, if that block has one of truncated image data

values or uniform image data values (col. 2, col. 4 line 60-col. 5 line 8); and

excluding (bypassing) any block having at least one of truncated (uniform) image

data values (col. 4 line 60-col. 5 line 51).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to include the scheme of Daly in the method of Van den Branden in

order to improve the quality of the images (Daly, col.1 lines 14-61).

(11)   Response to Argument

(A) The following discussion relates to the rejection of claims 1-5, 7-8, 10, 11-15,

17-18, 20-22 are rejected under 35 U.S.C. 103 (a) as unpatentable over US 6011868 to

Van den Branden et al. in view of US 6064324 to Shimizu et al. or US 5434623 to

Coleman et al.

1. <u>Appellants' argument</u>— Appellant argues for his group I relating to claims 1

and 11 that none of the estimates is taught in Brandon as "creating estimated

quantiztion tables (matrices) from any image data, let alone form decompression image

data" (page 13, paragraph 2-3) and "Branden explicitly discloses that the CDQM 220,

which is disclosed in col. 6, lines 59-62 as using <u>only the compressed video bitstream</u>".

<u>Examiner's response</u> — The Examiner respectfully disagree with Appellant.

Appellant's argument on the decompressed image data reveals his misunderstanding of

basic principle of image compression and his mischaracterization the Branden, which is

one of the reason we have this Appeal Brief now. As well known to one ordinary in the

art, the first stage of the decoding/decompression of image data is inverse decoding the

compressed image data stream, which is the IVLC (Inverse Variable Length Coding

(col. 2 lines 22-23) in Fig. 8, 210). The output of IVLC is decompressed image data to

be de-quantized in the second stage of IQDCT, and then, in third stage, de-quantized

image data will be inverse transformed (IDCT), and to reconstruct as

decoded/decompressed image in the fourth stage. Those are generally the four stages

for the image decoding/de-compressing, which are complimentary to image

coding/compression. In addition, Branden clearly shows the limitation of "receiving

decompressed image data" in Fig. 8, i.e., both two inputs of DCQM 220 receive the

image data after IVLC stage, thus, decompressed image data (col. 9 lines 33-47).

Furthermore, the citation of Applicant of Branden (col. 6 lines 59-62) is only means that

the quality analysis use only compressed video bitstream no **other additional**

information needed. The citation has nothing to do with "receiving decompressed

image data" as input of DCQM in Fig. 8. There is no confliction and/or implication to the

claimed language of "receiving decompressed image data", as described in Fig. 7 and

8, the DCQM 220 has **only** two inputs (decompressed image data) after IVLC , which

are related **only** the compressed data bitstream that is input of IVLC. Thus, the citation

is not saving the Appellant but only shows his mischaracterizing Branden. Moreover,

Branden explicitly teaches that the quantization matrices (table) can be changed

according to the quality estimations of resulting image/video output based on the

decoded image data (col. 9 line 33-col. 10 line 45).

Therefore, Appellant's argument is baseless and incorrect because of

misunderstanding and mischaracterization.

2. <u>Appellants' argument</u>---- Appellant also argues that "Because Branden does not create an estimated quantization table, Branden can not use a non-existent table to process image data. Moreover, Branden's DCQM 220 only works with compressed image data, Branden does not process decompressed image data, as recited, furthermore, Branden is merely concerned with predicting the quality of fully decoded video sequence—let alone decompressed image data" (page 13-14, paragraph 5+).

<u>Examiner's response</u> --- The Examiner respectfully disagree with Appellant. First, the Examiner believes that the real issue for this appeal is whether "creating a quatization table" in claim language constitutes "creating a quantization table without transmitting the quantization table used in the compression process" in the oral discussion during the interview with the Appellant's representative, Maryam Ipakchi. Appellant has changed "determining" to "creating" and tried to argue that "creating" means latter in the interview. The Examiner indicated that modifying quantization table to a new one can be viewed as creating an Q table (paper #7 page 3 and paper #10) and the meaning of the word "creating" is so broad that everyone practiced in image processing field would infringe the language because recent standards JPEQ, MEPQ, and others have all created a quantization table in the decoder side by either extracting the quatization information from the decoded data or modifying existing Q table or producing one based on received information. In response the argument of Appellant's representative, the Examiner further cited two references to show Appellant that even if he adds the limitations "without transmitting quantization table used in the compression process", the limitations has been known in the art, let alone "creating quantization table

from the decompression image data". However, Appellant refuses to clarify and further

limit the claim language, which is the another reason result in this Appeal Brief.

Second, "The proper approach is to construe the claim language using standard

dictionary definitions , because here, the claims have no specialized meaning." (citing

Texas digital) *Schumer v. Labroratory Computer systems, Inc.,* 308 F.3d 1304 (Fed. Cir.

2002). The word "create" means 1) to bring into being; 2) to give rise to: produce; 3) to

invest with an office or title: appoint; and 4) to produce through artistic or imaginative

effort (Webster's II New Riverside University Dictionary). Here, Branden's changing

quatization table based on the quality estimations on image data is at least fit the

definitions of 1), and 2) for the word "create" as ordinary and customary meaning. Thus,

Branden clearly teaches "creating an estimated quatization table from the received

decompressed image data". Moreover, claim language is given its broadest reasonable

interpretation. *In re Morris,* 127 F.3d 1048 (Fed. Cir. 1997). In the instant case,

Branden's changing Q table/matrices constitutes "creating" in its broadest reasonable

interpretation (fitting the meaning of the dictionary). Finally, Appellant's argument

"Branden is merely concerned with predicting the quality of fully decoded video

sequence—let alone decompressed image data" further reveals his misunderstanding

of image processing principle as well as mischaracterizing Branden. As well known in

the image compression art, the quality of decoded/decompressed image is closely

related to quantization table in the de-quantization stage. This is the reason why

Branden changes/creates the quantization table according the quality estimations.

Furthermore, the quality estimations of Branden predict the amount of distortion in the

resulting video image data by the CDQM based on the decompressed image data
(section A(1), col. 9 line 33-col. 10 line 45).

Therefore, Appellant's argument is baseless and incorrect because of
misunderstanding and mischaracterization.

3. Appellants' argument— Appellant further argues that Examiner fails to meet
evidentiary burden of showing alleged well known feature (page 14 paragraph 2)
because the claims say nothing about "without transmitting the quantization table used
in the compression process." (page 14, paragraph 4) and "based on the mis-statement,
the final rejection proceeds to cite and apply two different references." (page 15,
paragraph 5).

Examiner's response — The Examiner respectfully disagree with Appellant.
This is not a mis-statement. The cited references and the argument are directly
response to the oral arguments made by the Appellant in the interviews on September
11, 2002 and January 9, 2003. Appellant's representative emphasized that most
compression/decompression system have the Q table used in the compression side
transmitted to decompression side while the instant case can create a Q table from
decompressed image data without transmitting the quantization table used in the
compression process and those are the key differences between Branden and the
instant case. Thus, the Examiner has cited another two references both showing the
feature is well known in the Office Action, even though the Examiner mentions that
Branden still read on the broad language "creating" (also see A(2)).

4. Appellants' argument---- Appellant further argues that 1) the Examiner does

not make a prima facie case of obviousness of the invention because "the motivation is

not cleat and particular, ... and this rationale does not show the combination of these

two references is desirable." (page 15, paragraph 3), "based on hindsight using

Applicant's invention as a blueprint for combining the references" (page 16, paragraph

2); and 2) the Examiner "uses as a based reference, a system that analyzes video

signal bitstreams regardless of the nature of the bit bitstream quantization, and then

requires one of ordinary skill in the art to include specific types of video signal

quantization encoding as part of reference combination including an analyzer that does

not require or need any specific type of quantization." (page 15 last paragraph), and

"the resulting reference combination would not render the claimed invention obvious

because neither Shimizu nor Coleman provides the claimed features which are not

disclosed by Branden."(page 16, paragraph 3) , and also "never provides details of how

Shimizu or Coleman is to be combined with Branden" (page 16, paragraph 4).

Examiner's response — The Examiner respectfully disagree with Appellant.

Regarding to 1), the Examiner recognizes that obviousness can only be

established by combining or modifying the teachings of the prior art to produce the

claimed invention where there is some teaching, suggestion, or motivation to do so

found either in the references themselves or in the knowledge generally available to one

of ordinary skill in the art. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir.

1988) and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case,

both Branden and Shimizu or Coleman in the image processing field , especially image

compression/decompression related image processing field. Braden clearly discloses a

similar method and apparatus for compressing/decompressing image data. Although

Branden does not show that creating a quantization table without transmitting the Q

table used in compression side, such processing techniques are taught by both Shimizu

and Coleman. Moreover, Shimizu (col. 1 lines 49-67) or Coleman (col. 4 lines 18-67)

uses the techniques to improve the image decoding efficiency and quality, which is one

problem the Braden to solve. In addition, it must be recognized that any judgment on

obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning.

But so long as it takes into account only knowledge which was within the level of

ordinary skill at the time the claimed invention was made, and does not include

knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper.

See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). As can be seen

from the rejection, it has taken in to account only knowledge which was within the level

of ordinary skill, i.e. knowledge from the patens themselves. Clearly, according to these

guidelines, the motivation to combine references is found either in the references

themselves or in the knowledge generally available to one of ordinary skill in the art.

Obviousness to combine the reference is properly established.

Regarding to 2), the Examiner believe that the assertion of Appellant againg

shows his mischaracterizing of Braden. Braden changes the quantization matrices in

the decoder according to the quatization error (col. 9 line 64-col. 11 line 62). Thus,

contrast to the assertion of Appellant, Branden's analysis of video data bitstreams is

closely related to the nature of quantization so that Branden is rightfully combined with

either Shimizu or Coleman. Furthermore, the Examiner recognizes that the test for

obviousness is not whether the features of the reference may be bodily incorporated

into the other to produce the claimed subject matter but simply what the references

make obvious to one of ordinary skill in the art. *In Re Bozek*, 163 USPQ 545, (CCPA

1969); *In re Richman* 165 USPQ 509, (CCPA 1970); *In re Beckum*, 169 USPQ

47(CCPA 1971); *In re Sneed*, 710 F.2d 1544, 218 USPQ 385. In the instant case,

Branden discloses all limitations except "creating quantization table without transmitting

the quantization table used in the encoding.". Both Shimizu and Coleman disclose the

feature (see (10)). In addition, the obviousness to combine the reference is properly

established (see section A(4) (1)).

Therefore, the prima facie case of combination of Branden with Shimizu or with

Coleman is properly established.

5. Appellants' argument—— Appellant still further argues that 1) the combination

of Branden with Shimizu or with Coleman does not discloses the feature of claims 1 and

11, thus, claims 2, 12, 21, and 22 are not rendered obvious by the references

combination (page 17, paragraph 1); and 2) none of the applied references discloses

the unique feature of processing a decompressed image based on both with and

without and estimated quantization table (page 17, paragraph 1).

Examiner's response —— The Examiner respectfully disagree with Appellant.

Regarding to 1), sections A(1)-A(4) have illustrated that the prima facie case of

combination of Branden with Shimizu or with Coleman is properly established to cover

the all feature of claims 1 and 11.

Regarding to 2), there is no such "unique feature" in the claims 2, and 12. In

addition, the "unique feature" is probably not supported by the specification. The

features of claims 21-22 are discussed in details in section A(2)-A(4). The real feature of

claims 2 and 12 are discussed in section (10).

6. Appellants' argument—— Appellant still argues that 1) the combination of

Branden with Shimizu or with Coleman does not discloses the feature of claims 1 and

11, thus, claims 3-5 and 13-15 are not rendered obvious by the references combination

(page 17, paragraph 3); and 2) Branden only discloses the method of estimation spatial distortion of a video output stream, which are not disclosed as creating an estimation quantization table (page 17, paragraph 3).

Examiner's response ---- The Examiner respectfully disagree with Appellant.

Regarding to 1), sections A(1)-A(4) have illustrated that the prima facie case of combination of Branden with Shimizu or with Coleman is properly established to cover the all feature of claims 1 and 11.

Regarding to 2), Branden explicitly mentions that "Although the previously described estimations of distortion were based on the approximation of EQ. (3), there are other methods of estimating the amount of spatial distortion of the resulting video ourpur stream due to the quantization error." "... a better estimation of the pdf for the considered sequence and may be determined during the decoding process by measuring the histogram of quantized DCT coefficients and estimating the parameters of GGF by maximum likelihood estimation." (col. 12 line 36-col. 13 line 20). Here, EQ, (3) is utilized to change or create the each Q factors of quantization table so does the maximum likelihood estimation.

Therefore, claims 1-5, 7-8, 10, 11-15, 17-18, 20-22 are properly rejected under 35 USC §103.

(B). The following discussion relates to the rejection of claims 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van den Branden, Shimizu, and Coleman, further in view of Daly.

1. Appellants' argument--- Appellant argues that 1) the motivation reason is not clear and particular and this rationale does not show the combination of these two references is desirable. (page 18, paragraph 4); 2)) the Examiner "uses as a based reference, a system that analyzes video signal bitstreams regardless of the nature of

the bit bitstream quantization, and then requires one of ordinary skill in the art to include specific types of video signal quantization encoding as part of reference combination including an analyzer that does not require or need any specific type of quantization. (page 18 paragraph 5); and 3) the motivation is improperly based on hindsight using Applicant's invention as a blueprint for combining the references (page 19, paragraph 2).

Examiner's response ---- The Examiner respectfully disagree with Appellant.

Regarding 1) and 3), the Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, both Branden and Shimizu or Coleman as well as Daly are in the image processing field , especially image compression/decompression related image processing field. Braden clearly discloses a similar method and apparatus for compressing and decompressing image data. Although the combination of Branden and Shimizu or Coleman does not show the steps of determining the block having truncated of uniform image data and excluding one of the image data values, such processing techniques are taught by Daly. Moreover, Daly (see section11) uses the techniques to improve the image quality measurment, which is one of problems Branden tries to solve. In addition, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's

disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170

USPQ 209 (CCPA 1971). As can be seen from the rejection, it has taken in to account

only knowledge which was within the level of ordinary skill, i.e. knowledge from the

patens themselves. Clearly, according to these guidelines, the motivation to combine

references is found either in the references themselves or in the knowledge generally

available to one of ordinary skill in the art. Obviousness to combine the reference is

properly established.

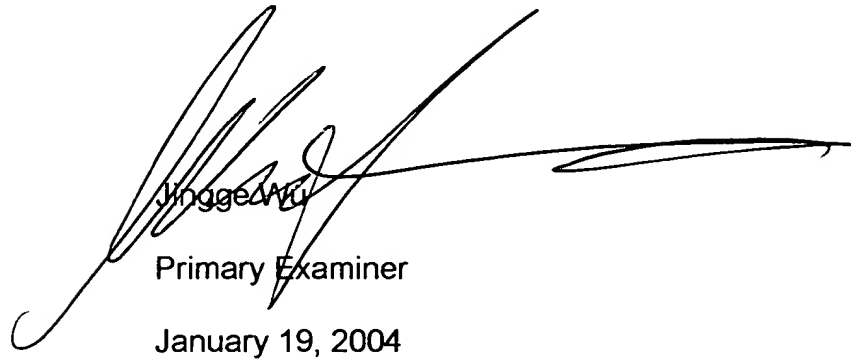Regarding to 2), the response is addressed with respect to A(4)(2).

(C) The following discussion relates to the rejection of claims 9 and 19 are

rejected under 35 U.S.C. 103(a) as being unpatentable over Van den Branden, Shimizu,

and Coleman, further in view of Yovanof et al.

1. Appellants' argument---- Appellant argues that Yovanf merely determines the

quatization error in a DCT based lossy compression scheme, and does not create an

estimated quantization table because Branden does not disclose feature of claims 1 and

11 and the combination does not address the feature recited in claims 1 and 11, let

along in claims 9 and 19.

Examiner's response --- The Examiner respectfully disagree with Appellant.

Again, Appellant's argument is based on the mischaracterization of Braden, the

response is addressed with regard to section A(6). Thus, the combination of references

dose discloses the features recited in both claims 1 and 11, 9 and 19.

For the above reasons, it is believed that the rejections should be

sustained.

Respectfully submitted

Jingge Wu

Primary Examiner

January 19, 2004

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